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## FORMATION OF METHODOLOGICAL PLATFORM FOR EVALUATION OF ECONOMIC SAFETY OF ENTERPRISES

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### ФОРМУВАННЯ МЕТОДОЛОГІЧНОЇ ПЛАТФОРМИ ДЛЯ ОЦІНКИ ЕКОНОМІЧНОЇ БЕЗПЕКИ ПІДПРИЄМСТВ

*The study of the basic approaches to assessment of the level of economic security of enterprises suggests that each of the methods discussed in the paper has certain limitations in the use, and therefore does not allow to fully and accurately determine the existing situation. Indicative and resource-based approaches to assessment of the level of economic security have become the most widespread. In this case, the assessment of economic security is reduced to the assessment of the quality of enterprises by comparing the value of the indicators achieved to a certain fixed point of time with the values of previous moments or critical ones. However, it should be noted that there is currently no single unified approach to determination of the limits of economic security indicators. The level of effectiveness of each particular mathematical method (model) shall be determined by the extent to which the totality of observational phenomena recorded in the relationships with the hypotheses operationalizing their relationships meets the criteria of completeness, compactness, consistency and explicitness. Analysis of existing complex systems and research of new ones, including security systems, has shown that ensuring their systemic stability and harmony is achieved through the correlation between the main indicators based on the principle (or rule) of the "golden section". Methods of the theory of fuzzy sets, which, as well as the method of expert estimates, serve to describe the quantitative and qualitative characteristics of the processes studied. In particular, it is advisable to use an approach based on the theory of fuzzy sets in situations where experts can not draw conclusions about the level of indicators. The application of this method to the assessment of the economic security of enterprises also requires further development and scientific substantiation.*

*Дослідження основних підходів до оцінки рівня економічної безпеки підприємств дозволяє стверджувати, що кожна із розглянутих у статті методик має певні обмеження у використанні, а тому не дає можливості повно і точно визначити існуюче становище. Найбільшого поширення набули індикаторний та ресурсно-функціональний підходи до оцінки рівня економічної безпеки. При цьому, оцінювання економічної безпеки зводиться до оцінки якості діяльності підприємств на основі порівняння значення показників, досягнутих до деякого фіксованого моменту часу зі значеннями попередніх моментів або критичних. Однак необхідно зазначити, що нині відсутній єдиний уніфікований підхід до визначення граничних значень індикаторів економічної безпеки. Рівень ефективності кожного конкретного математичного методу (моделі) визначається тим, наскільки сукупність спостережених явищ, зафіксованої у взаємозв'язках з операціоналізуючими їх відношення гіпотезами, відповідає критеріям повноти, компактності, несуперечливості та експліцитності. Аналіз існуючих і дослідження нових складних систем, у т.ч. й систем безпеки, засвідчив, що забезпечення їх системної стійкості та гармонії досягається за допомогою співвідношення між основними показниками, заснованими на принципі (або правилі) «золотого перетину». Методи теорії нечітких множин, які, як і метод експертних оцінок, слугують для опису кількісних і якісних характеристик досліджуваних процесів. Зокрема, доцільно використовувати підхід, заснований на теорії нечітких множин, у ситуаціях, коли експерти не можуть зробити висновки про рівень показників. Застосування даного методу до оцінки економічної безпеки підприємств також вимагає подальшої розробки та наукового обґрунтування.*

**Keywords:** economic security, fuzzy set theory, indicators, program-target approach, strategic analysis.

**Ключові слова:** економічна безпека, теорія нечітких множин, індикатори, програмно-цільовий підхід, стратегічний аналіз.

**Formulation of the problem.** When formulating goals and indicating objects, the strategy of economic security should include the characterization of external and internal threats; definition of criteria and parameters (threshold values) of indicators characterizing the interests of enterprises and meeting the requirements of its economic security; development of economic policy, including mechanisms of actions influencing the state of economic security; the direction of the implementation of the strategy.

**Analysis of recent studies and publications.** Issues of the development of insurance markets of the world are at the focus of attention of foreign scientists, such as: Jan, S. R., Shah, S. T. U., Johar, Z. U., Shah, Y., & Khan, F. (2016), Jan, S. R., Shah, S. T. U., Johar, Z. U., Shah, Y., & Khan, F. (2016), Chen, S. (2017).

Highly appreciating the scientific achievements of the mentioned authors, it is necessary to recognize the insufficient development of problems of methods for assessment of economic security in the light of current trends.

**Formulation of a problem.** The purpose of the paper is to study the methods of assessment of the economic security of enterprises.

**Presentation of main material.** The study of the basic approaches to assessment of the level of economic security of enterprises suggests that each of the methods discussed in the paper has certain limitations in the use, and therefore does not allow to fully and accurately determine the existing situation. Indicative and resource-based approaches to assessment of the level of economic security have become the most widespread. In this case, the assessment of economic security is reduced to the assessment of the quality of enterprises by comparing the value of the indicators achieved to a certain fixed point of time with the values of previous moments or critical ones.

The state of economic security is a set of stable values of the variable parameters of the object - the external and internal factors that provide the above conditions of operation [1]. The state of its own security must be controlled by the economic entity itself, that is, the security of the subject is the creation of completely certain conditions under which its interests would be realized and the objectives of its own operations would be achieved by its own forces.

The level of economic security is the degree to which safe operating conditions are achieved, and today it is one of the important factors in its effective functioning. Economy depends on both internal and external factors. The internal aspects of security are mainly have financial and economic nature, and external - political, environmental, legal, etc. That is why we observe the attention of scientists and practitioners of different branches of knowledge to the subjects of risk and safety.

The concept of economic security is complex and includes all functional areas of activity, and its provision is a continuous and systematic process. So, we should talk about the system of economic security of enterprises. Like any system, the system of economic security requires constant self-testing and updating. For this purpose, it is necessary to monitor the main parameters. It is necessary to create an algorithm for "early warning" of negative processes in terms of economic security criteria.

The diagnosing of the state of economic security is a difficult task. This is due to a number of unresolved issues of a theoretical and conceptual nature, such as the ambiguous understanding of the notion of "economic security", development of a unified, scientifically sound classification of threats to economic security at the macro level, development of clear and complete algorithms for the creation and functioning of an economic security system, the basis of which should be the methodology level assessment, scientifically grounded principles and a well-worked mechanism for managing the state of economic security.

To characterize the state of economic security, it is necessary to carry out qualitative and quantitative analysis of it. The timeliness of measures of confrontation to threats and dangers aimed at preservation of the stable functioning of enterprises and ensuring protection of state security interests depends on this.

Qualitative analysis of the state of economic security of enterprises goes before quantitative one and is in the classification of all possible threats to activities, factors that determine them, prediction of possible negative consequences of the implementation of these threats, and determination of ways to reduce their level.

For a more complete description of the state of economic security of enterprises, the quantitative analysis is also required. The results of the quantitative assessment will allow to compare levels of economic security in time and space, analyze the trend of their changes, quantify the impact of various factors on the level of economic security and the causal link between the factors determined and the level of economic security.

But an appropriate tool is needed to assess the level of economic security.

Modern scientific literature offers a large number of different models and methods for assessment of the state of economic security of enterprises: from general-scientific models to author techniques and suggestions. The complexity of the problem lies in the openness and reactivity of enterprises as a system that generates and delivers information to the internal and external environment.

The existence of different approaches leads to the need and expediency of their system classification and generalization in order to identify the advantages and disadvantages, and their improvement in the future or the development of more comprehensive and reliable methods on their basis.

Analysis and comparison of approaches and methods of assessment of the level of economic security of enterprises allows to state that they vary significantly.

According to the results of the study, the following main approaches to assessment of the level of economic security of enterprises are distinguished: indicator-based; resource-functional; programm-target.

The monitoring of the effectiveness of state policy based on the indicators of the state of enterprises, is an independent analytical procedure, which is carried out in order to identify the deviations of the business support system from the declared strategic course of the state.

At the same time, it implements four main functions: Assessment of the effectiveness of the enterprise security system in relation to the implementation of the declared strategic course; control over the quality of decisions for operational adjustment of the security system; an explanation that helps to find out why the implications of alternatives to state security policy and strategic direction are different; reporting that helps to compile reports, etc. on social and economic changes that occur after the practical implementation of a wide range of policy alternatives and state security programs for a certain period of time.

The indicator-based approach to assessment of the economic security allows us to comprehensively assess its level of, since at least (depending on the system of indicators) main aspects of the activities are assessed. The comparison of the actual values of the indicators with the thresholds allows us to trace the dynamics of both the indicators themselves and the level of economic security.

In assessing the economic security of the economy, emphasize that the groups of indicators should be considered in four vectors: economic support, economic independence, economic security, and social stability [108].

The obtained indicators can be further used in the formation of the strategy of economic security of enterprises [3, 4]. Indicator values shall be measured in percentages. The reduction of the value of the indicator characterizes the deterioration of the state of economic security. To determine the integral index of economic security of enterprises, the valuation of these indicators shall be carried out [5].

However, for this approach of the assessment of the economic security of the enterprises, the questions on the methodological basis for determination of indicators that take into account the peculiarities of the functioning of enterprises, dynamics of the external environment, etc., composition of indicator, and the definition of threshold values for them are debatable. As a result, with insufficiently precise quantification of the indicators, the level of economic security can be misunderstood, which in turn could lead to inadequate decisions in the field of provision of the appropriate level of economic security of enterprises.

For example, Oleynikov Ye. considers a set of processes occurring in an organization with all interconnections that form a single indivisible group in terms of their functional role in provision of economic security [6]. They distinguish seven functional components of economic security: intellectual, financial, technical and technological, political and legal, environmental, informational, and power. The list of components of economic security may differ from the one given, depending on the authors' opinion.

The main advantages of this approach are its comprehensive, complex nature, since it examines the main processes that affect the level of support of economic security [7]. At the same time, economic security is considered too detailed and is identified with the very activities of enterprises.

The program-targeted approach is based on the integration of indicators that determine the level of economic security. Considerable attention is paid to the use of this approach in the selection of indicators and the definition of methods for their integration [7].

Reverchuk N. J. uses an integrated safety indicator for assessment of the level of economic security, which is calculated on the basis of scores of technical, technological, financial, personnel, environmental, information, political-and-legal, power and market security [8].

Other options for choosing a cumulative or integral criterion for economic security are also proposed. This approach is characterized by the greatest criticism, since it is quite indirectly characterizing the level of economic security.

The considered main approaches to assessment of the level of economic security of enterprises have a number of general disadvantages: the set of indicators of economic security is high due to the fact that it is necessary to cover all aspects of activity; the necessity of gradation of the levels of economic security from the magnitude of the deviations of the actual and threshold values of the indicators; methods are quite labour-intensive and need to use a large amount of statistical data.

In addition, the methods of integrated assessment of economic security of enterprises are used - assessment of a competitors, integrated assessment of interest observation, SWOT-analysis, PEST-analysis, SNW-analysis, etc.; structural and analytical methods (modelling, hierarchical decomposition, morphological analysis, matrix method, network analysis, building of a semantic differential, building of a profile of the environment, and drawing of scenarios).

Extrapolation methods are used to determine the relationship between economic indicators: extrapolation of parametric dependencies and extrapolation of temporal tendencies. The main condition for using the extrapolation method is the relatively stable development of enterprises, since the conclusions about the value of forecast indicators in future periods are made on the basis of studying their dynamics in previous periods. This method is not relevant for application, since the development of enterprises is characterized by instability and significant fluctuations of financial indicators. In addition, it is worth mentioning the methods of analyzing the dynamics of the main microeconomic indicators and the tendency of microeconomic developments to establish the corresponding laws.

The methods of analysis and processing of scenarios are intended for forecasting of different variants of the situation development, methods of optimization - for choosing the option, which achieves the most desired result, theory-and-game methods - to determine the options for development in the unpredictable external environment.

The theory of artificial neural networks is based on the modelling of nonlinear dependencies in solving problems of integrated assessment of the level of economic security. This method is quite difficult to use, which in this case can be attributed to its disadvantages.

It would be advisable to use a group of methods for integrated assessment of threats, which include assessment of the risks of enterprises and identification of threats, which, however, is not always related to the analysis of the level of economic security. This issue requires further study.

**Conclusions.** However, it should be noted that there is currently no single unified approach to determination of the limits of economic security indicators. The level of effectiveness of each particular mathematical method (model) shall be determined by the extent to which the totality of observational phenomena recorded in the relationships with the hypotheses operationalizing their relationships meets the criteria of completeness, compactness, consistency and explicitness.

So, in the practice of economic analysis there is a powerful tool that allows a comprehensive analysis of the level of economic security of enterprises, although the study category is complex and inclusive.

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